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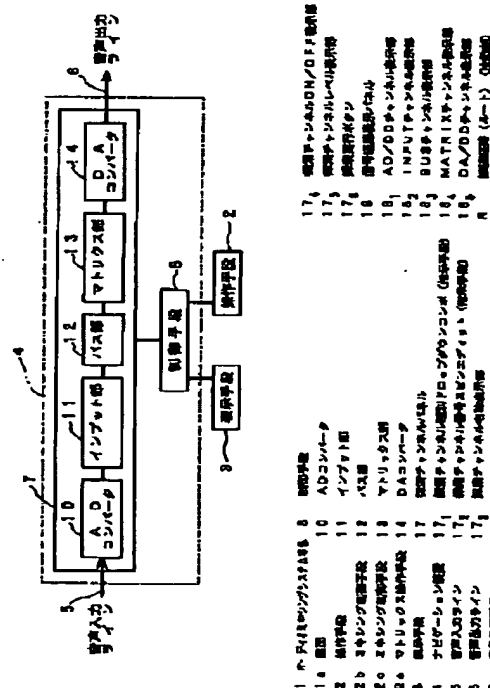
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(54) 【発明の名称】 オーディオミキシングシステムのナビゲーション装置及びそのナビゲーション方法

(57) 【要約】

【課題】 現在のミキシング状態や、ミキシングされた信号がどのルートを経由して出力されているかを画面表示により容易に確認できるようにする。

【解決手段】 音声入力ライン5より入力されるオーディオ信号をマトリックス部でミキシングして音声出力ライン6より出力するオーディオミキシングシステム本体1のナビゲーション装置4であって、音声入力ライン5より入力されたオーディオ信号を信号処理して音声出力ライン6より出力する信号処理手段7と、信号処理手段7を構成する複数の信号処理部及びこれら信号処理部を接続する接続部を制御する制御手段8と、制御手段8に制御指示を与える指示手段と、制御手段8の制御状態を画面表示する表示手段3とを備え、表示された画面上より信号処理手段7の信号処理部を指示することにより各信号処理部の接続状態を探索し、探索結果を表示手段3に画面表示する。



## 【特許請求の範囲】

【請求項1】 音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理して音声出力ラインより出力するオーディオミキシングシステム本体の信号処理手段と、

前記信号処理手段を構成する複数の前記信号処理部及びこれら信号処理部間を接続する接続部を制御する制御手段と、

前記制御手段に制御指示を与える指示手段と、

前記制御手段の制御状態を画面表示する表示手段とを備え、

前記指示手段で前記信号処理手段の前記信号処理部を指定することにより前記制御手段が前記信号処理部間の前記接続部の状態を検索し、前記信号処理部間の接続状態を前記表示手段に画面表示するようにしたことを特徴とするオーディオミキシングシステムのナビゲーション装置。

【請求項2】 音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理し且つレベル調整手段によりミキシングレベルを調整して前記音声出力ラインより出力するオーディオミキシングシステム本体の信号処理手段と、

前記信号処理手段を構成する複数の前記信号処理部とこれら信号処理部間を接続する接続部と前記レベル調整手段とを制御する制御手段と、

前記制御手段に制御指示を与える指示手段と、

前記制御手段の制御状態を画面表示する表示手段とを備え、

前記指示手段で前記信号処理手段の前記信号処理部を指定することにより前記制御手段が前記信号処理部間の前記接続部の接続状態及び前記レベル調整手段のレベル状態を検索し、前記信号処理部間の前記接続部の接続状態及び前記レベル調整手段のレベル状態を前記表示手段に画面表示するようにしたことを特徴とするオーディオミキシングシステムのナビゲーション装置。

【請求項3】 各信号処理部間の接続部の接続状態を表示手段に画面表示する際、レベル調整手段のレベル状態に応じて前記接続部の線幅を変変するようにしたことを特徴とする請求項2記載のオーディオミキシングシステムのナビゲーション装置。

【請求項4】 各信号処理部間の接続部の接続状態を表示手段に画面表示する際、レベル調整手段のレベル状態に応じて前記接続部の線色を変更するようにしたことを特徴とする請求項2記載のオーディオミキシングシステムのナビゲーション装置。

【請求項5】 各信号処理部の接続部の接続状態を表示手段に画面表示する際、前記各信号処理部の制御状態を、前記表示手段の画面の一部に表示するようにしたことを特徴とする請求項1記載のオーディオミキシングシステムのナビゲーション装置。

【請求項6】 指示手段から信号処理部あるいは接続部の制御状態の変更を指示することで、制御手段が制御を実行する請求項5記載のオーディオミキシングシステムのナビゲーション装置。

【請求項7】 音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理して音声出力ラインより出力するオーディオミキシングシステム本体の信号処理工程と、

前記信号処理工程を構成する複数の前記信号処理部及びこれら信号処理部間を接続する接続部を制御する制御工程と、

前記制御工程に制御指示を与える指示工程と、

前記制御工程の制御状態を画面表示する表示工程とを備え、

前記指示工程で前記信号処理工程の前記信号処理部を指定することにより前記制御工程が前記信号処理部間の前記接続部の状態を検索し、前記信号処理部間の接続状態を前記表示工程に画面表示するようにしたことを特徴とするオーディオミキシングシステムのナビゲーション方法。

【請求項8】 音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理し且つレベル調整工程によりミキシングレベルを調整して前記音声出力ラインより出力するオーディオミキシングシステム本体の信号処理工程と、

前記信号処理工程を構成する複数の前記信号処理部とこれら信号処理部間を接続する接続部と前記レベル調整工程とを制御する制御工程と、

前記制御工程に制御指示を与える指示工程と、

前記制御工程の制御状態を画面表示する表示工程とを備え、

前記指示工程で前記信号処理工程の前記信号処理部を指定することにより前記制御工程が前記信号処理部間の前記接続部の接続状態及び前記レベル調整工程のレベル状態を検索し、前記信号処理部間の前記接続部の接続状態及び前記レベル調整工程のレベル状態を前記表示工程に画面表示するようにしたことを特徴とするオーディオミキシングシステムのナビゲーション方法。

【請求項9】 各信号処理部間の接続部の接続状態を表示工程に画面表示する際、レベル調整工程のレベル状態に応じて前記接続部の線幅を変変するようにしたことを特徴とする請求項8記載のオーディオミキシングシステムのナビゲーション方法。

【請求項10】 各信号処理部間の接続部の接続状態を表示工程に画面表示する際、レベル調整工程のレベル状態に応じて前記接続部の線色を変更するようにしたことを特徴とする請求項8記載のオーディオミキシングシステムのナビゲーション方法。

【請求項11】 各信号処理部の接続部の接続状態を表示工程に画面表示する際、前記各信号処理部の制御状態

を、前記表示工程の画面の一部に表示するようにしたことを特徴とする請求項7記載のオーディオミキシングシステムのナビゲーション方法。

【請求項12】 指示工程から信号処理部あるいは接続部の制御状態の変更を指示することで、制御工程が制御を実行する請求項11記載のオーディオミキシングシステムのナビゲーション方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、入力されたオーディオ信号がどのようにミキシングされ、また、どのルートを経由して出力されているかを画面に表示するオーディオミキシングシステムのナビゲーション装置及びナビゲーション方法に関する。

【0002】

【従来の技術】複数のオーディオ信号をミキシングして音響機器に出力するオーディオミキシングシステムは、音響設備に欠かせないものとなっているが、近年では音響システムの巨大化に伴い、オーディオミキシングシステムがミキシングするオーディオ信号も多チャンネル化し、オーディオミキシングシステムの盤面上には、多数の操作部が設けられるなど、益々複雑な構成となっていて、これを操作するのに熟練を必要とする。

【0003】また、入力されたオーディオ信号を、オーディオミキシングシステムでミキシングして所定の音響機器へ出力する場合、入力されたオーディオ信号がどのようにミキシングされ、かつどのルートを経由して音響機器へ出力されているかを常に把握しながら、盤面上の操作部を操作する必要がある。

【0004】

【発明が解決しようとする課題】しかし、従来のオーディオミキシングシステムでは、使用者の経験や記憶に頼って盤面上の操作部を操作しているために、使用者の見逃しや、勘違いなどにより、入力信号を誤ってミキシングしたり、ミキシングした信号を誤って別の音響機器へ出力するなどのミスが発生しやすいという問題点があった。

【0005】また、システムの巨大化によりミキシングするチャンネルが増大すると、使用者の経験や記憶では管理できる範囲を超えるため、使用者が現在のミキシング状態を把握できずに混乱し、正常なミキシング操作ができなくなるなどの問題点もあった。

【0006】特に、最近では、オーディオ信号をデジタル化してミキシング処理を行うことが多くなっていることから、処理の状況が盤面上にすべて表示されることがなくなっており、その結果、全ての状況が表示されるアナログミキサに比べて状況の把握が益々困難となって、使用者の負担が増大し、使用者が早期に疲労するなどの問題点もあった。

【0007】本発明は、かかる従来の問題点に着目して

なされたものであって、その第1の目的とするところは、現在のミキシング状態や、ミキシングされた信号がどのルートを経由して出力されているかが画面表示により容易に確認できるオーディオミキシングシステムのナビゲーション装置を提供することにある。

【0008】また、本発明の第2の目的とするところは、現在のミキシング状態や、ミキシングされた信号がどのルートを経由して出力されているかが画面表示により容易に確認できるオーディオミキシングシステムのナビゲーション方法を提供することにある。

【0009】

【課題を解決するための手段】上記した第1の目的を達成するために、本発明に係るオーディオミキシングシステムのナビゲーション装置は、音声入力ラインより入力された複数チャンネルのオーディオ信号を処理して音声出力ラインへ出力する信号処理手段の信号処理部を指示手段により指示することにより、各信号処理部の接続状態を表示手段に画面表示するようにしたもので、画面を見ることにより、現在のミキシング状態や任意なチャンネルに着目したミキシング状態などが容易に確認できるようになる。

【0010】また、上記した第2の目的を達成するために、本発明に係るオーディオミキシングシステムのナビゲーション方法は、各信号処理部の接続状態を表示工程に画面表示するようにしたもので、画面を見ることにより、現在のミキシング状態や任意なチャンネルに着目したミキシング状態などが容易に確認できるようになる。

【0011】

【発明の実施の形態】請求項1の発明に係るオーディオミキシングシステムのナビゲーション装置は、音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理して音声出力ラインより出力するオーディオミキシングシステム本体の信号処理手段と、信号処理手段を構成する複数の信号処理部及びこれら信号処理部間を接続する接続部を制御する制御手段と、制御手段に制御指示を与える指示手段と、制御手段の制御状態を画面表示する表示手段とを備え、指示手段で信号処理手段の信号処理部を指定することにより制御手段が信号処理部間の接続部の状態を検索し、信号処理部間の接続状態を表示手段に画面表示するようにしたものである。

【0012】かかる構成により、表示手段に表示された画面を見ることにより、ミキシング状態が一目で確認することができると共に、任意なチャンネルを指定して、そのチャンネルのミキシング状態を確認することができる。

【0013】また、請求項2の発明に係るオーディオミキシングシステムのナビゲーション装置は、音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理し且つレベル調整手段によりミキシングレベルを調整して前記音声出力ラインより出力するオー

ディオミキシングシステム本体の信号処理手段と、信号処理手段を構成する複数の信号処理部とこれら信号処理部間を接続する接続部とレベル調整手段とを制御する制御手段と、制御手段に制御指示を与える指示手段と、制御手段の制御状態を画面表示する表示手段とを備え、指示手段で信号処理手段の信号処理部を指定することにより制御手段が信号処理部間の接続部の接続状態及びレベル調整手段のレベル状態を検索し、信号処理部間の接続部の接続状態及びレベル調整手段のレベル状態を表示手段に画面表示するようにしたものである。

【0014】かかる構成により、表示手段に表示された画面を見ることにより、ミキシング状態が一目で確認することができると共に、任意なチャンネルを指定して、そのチャンネルのミキシング状態や、ミキシングレベルを確認することができる。

【0015】また、請求項3の発明に係るオーディオミキシングシステムのナビゲーション装置は、請求項2に記載のオーディオミキサのナビゲーション装置において、各信号処理部間の接続部の接続状態を表示手段に画面表示する際、レベル調整手段のレベル状態に応じて接続部の線幅を可変するようにしたものである。

【0016】かかる構成により、上記した請求項2の発明の作用効果と同様な作用効果を奏し得るばかりか、表示手段に画面表示された接続部の線幅により、視覚的にミキシングレベルを確認することができる。

【0017】また、請求項4の発明に係るオーディオミキシングシステムのナビゲーション装置は、請求項2に記載のオーディオミキシングシステムのナビゲーション装置において、各信号処理部間の接続部の接続状態を表示手段に画面表示する際、レベル調整手段のレベル状態に応じて接続部の線色を変更するようにしたものである。

【0018】かかる構成により、上記した請求項2の発明の作用効果と同様な作用効果を奏し得るばかりか、表示手段に画面表示された接続部の色により、視覚的にミキシングレベルを確認することができる。

【0019】また、請求項5の発明に係るオーディオミキシングシステムのナビゲーション装置は、請求項1に記載のオーディオミキシングシステムのナビゲーション装置において、各信号処理部の接続部の接続状態を表示手段に画面表示する際、各信号処理部の制御状態を、表示手段の画面の一部に表示するようにしたものである。

【0020】かかる構成により、上記した請求項1の発明の作用効果と同様な作用効果を奏し得るばかりか、単一の画面内にミキシング状態と各信号処理部の制御状態が表示されるため、ミキシング状態と制御状態が画面を一目するだけで確認することができる。

【0021】また、請求項6の発明に係るオーディオミキシングシステムのナビゲーション装置は、請求項5に記載のオーディオミキシングシステムのナビゲーション

装置において、指示手段から信号処理部あるいは接続部の制御状態の変更を指示することで、制御手段が制御を実行するようにしたものである。

【0022】かかる構成により、上記した請求項1の発明の作用効果と同様な作用効果を奏し得るばかりか、各信号処理部の制御状態の変更が画面上で容易に行えるようになる。

【0023】また、請求項7の発明に係るオーディオミキシングシステムのナビゲーション方法は、音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理して音声出力ラインより出力するオーディオミキシングシステム本体の信号処理工程と、信号処理工程を構成する複数の信号処理部及びこれら信号処理部間を接続する接続部を制御する制御工程と、制御工程に制御指示を与える指示工程と、制御工程の制御状態を画面表示する表示工程とを備え、指示工程で信号処理工程の信号処理部を指定することにより制御工程が信号処理部間の接続部の状態を検索し、信号処理部間の接続状態を表示工程に画面表示するようにした。

【0024】したがって、表示工程に表示された画面を見ることにより、ミキシング状態が一目で確認することができると共に、任意なチャンネルを指定して、そのチャンネルのミキシング状態を確認することができる。

【0025】また、請求項8の発明に係るオーディオミキシングシステムのナビゲーション方法は、音声入力ラインより入力されたオーディオ信号を複数の信号処理部により信号処理し且つレベル調整工程によりミキシングレベルを調整して音声出力ラインより出力するオーディオミキサ本体の信号処理工程と、信号処理工程を構成する複数の信号処理部とこれら信号処理部間を接続する接続部とレベル調整工程とを制御する制御工程と、制御工程に制御指示を与える指示工程と、制御工程の制御状態を画面表示する表示工程とを備え、指示工程で信号処理工程の信号処理部を指定することにより制御工程が信号処理部間の接続部の接続状態及びレベル調整工程のレベル状態を検索し、信号処理部間の接続部の接続状態及びレベル調整工程のレベル状態を表示工程に画面表示するようにした。

【0026】したがって、表示工程に表示された画面を見ることにより、ミキシング状態が一目で確認することができると共に、任意なチャンネルを指定して、そのチャンネルのミキシング状態や、ミキシングレベルを確認することができる。

【0027】また、請求項9の発明に係るオーディオミキシングシステムのナビゲーション方法は、請求項8記載のオーディオミキシングシステムのナビゲーション方法において、各信号処理部間の接続部の接続状態を表示工程に画面表示する際、レベル調整工程のレベル状態に応じて接続部の線幅を可変するようにした。

【0028】したがって、上記した請求項8の発明の作

用効果と同様な作用効果を奏し得るばかりか、表示手段に画面表示された接続部の線幅により、視覚的にミキシングレベルを確認することができる。

【0029】また、請求項10の発明に係るオーディオミキシングシステムのナビゲーション方法は、請求項8記載のオーディオミキシングシステムのナビゲーション方法において、各信号処理部間の接続部の接続状態を表示工程に画面表示する際、レベル調整工程のレベル状態に応じて接続部の線色を変更するようにした。

【0030】したがって、上記した請求項8の発明の作用効果と同様な作用効果を奏し得るばかりか、表示工程に画面表示された接続部の色により、視覚的にミキシングレベルを確認することができる。

【0031】また、請求項11の発明に係るオーディオミキシングシステムのナビゲーション方法は、請求項7記載のオーディオミキシングシステムのナビゲーション方法において、各信号処理部の接続部の接続状態を表示工程に画面表示する際、前記各信号処理部の制御状態を、表示工程の画面の一部に表示するようにした。

【0032】したがって、上記した請求項7の発明の作用効果と同様な作用効果を奏し得るばかりか、単一の画面内にミキシング状態と各信号処理部の制御状態が表示されるため、ミキシング状態と制御状態が画面を一目するだけで確認することができる。

【0033】また、請求項12の発明に係るオーディオミキシングシステムのナビゲーション方法は、請求項11記載のオーディオミキシングシステムのナビゲーション方法において、指示工程から信号処理部あるいは接続部の制御状態の変更を指示することで、制御工程が制御を実行する。

【0034】したがって、上記した請求項7の発明の作用効果と同様な作用効果を奏し得るばかりか、各信号処理部の制御状態の変更が画面上で容易に行えるようになる。

【0035】以下、本発明の実施の形態を図面を参照して詳述する。

【0036】図1はナビゲーション装置を備えたオーディオミキシングシステムの平面図、図2はナビゲーション装置のブロック図、図3以下は表示手段に表示される表示画面の説明図である。

【0037】図1において1はオーディオミキシングシステム本体であり、このオーディオミキシングシステム本体1の上面に設けられた盤面1aに、操作手段2と、表示手段3などが設けられており、オーディオミキシングシステム本体1内にはナビゲーション装置4が収容されている。

【0038】ナビゲーション装置4は、図2に示すように音声入力ライン5より入力された多チャンネルのオーディオ信号をミキシング処理して音声出力ライン6へ出力する信号処理手段7と、この信号処理手段7を制御す

るCPUよりなる制御手段8とより構成しており、制御手段8には操作手段2及び表示手段3が接続されている。

【0039】また、信号処理手段7は、音声入力ライン5より入力されたアナログ音声信号をデジタル信号に変換するADコンバータ（信号処理部）10と、インプット部（信号処理部）11、バス部（信号処理部）12、マトリックス部（信号処理部）13及びマトリックス部（信号処理部）13より出力されたデジタル信号をアナログ音声信号に変換して音声出力ライン6へ出力するDAコンバータ（信号処理部）14よりなる。

【0040】また、オーディオミキシングシステム本体1の盤面1aに設けられた操作手段2には、インプット部11よりバス部12へ出力される信号をミキシング制御するミキシング制御手段2b、バス部12よりマトリックス部13へ出力される信号をミキシング制御するミキシング制御手段2c及びマトリックス部13を操作するマトリックス操作手段2eが設けられている。また、ADコンバータ10よりインプット部11へ出力される信号をスイッチング制御するスイッチング制御及びマトリックス部13よりDAコンバータ14へ出力される信号をスイッチング制御するスイッチング制御は、GUI（グラフィカル・ユーザー・インターフェース）を用いて行われる。

【0041】一方、現在のミキシングの状態や、あるチャンネルを起点として信号の接続を探索する表示手段3は、液晶表示器（LCD）より構成されていて、図3以下に示す画面表示が行えるようになっている。

【0042】次に、図3以下に示す画面表示を参照して、現在のミキシング状態を表示したり、信号の接続状態を探索する際の作用を説明する。

【0043】表示手段3のナビゲーション画面上には、あらかじめ上段に探索チャンネルパネル17が、そして下段に経路表示パネル18が表示されている。

【0044】探索チャンネルパネル17には、信号経路の確認を行う起点なるチャンネルの種別を選択表示する探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>と、チャンネル番号を選択表示する探索チャンネル番号スピンエディット17<sub>2</sub>と、探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>及び探索チャンネル番号スピンエディット17<sub>2</sub>からなる指示手段で指定されたチャンネル名称を表示する探索チャンネル名称表示部17<sub>3</sub>と、探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>及び探索チャンネル番号スピンエディット17<sub>2</sub>で指定されるチャンネルのON/OFF状態を表示する探索チャンネルON/OFF表示部17<sub>4</sub>と、探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>及び探索チャンネル番号スピンエディット17<sub>2</sub>で指定されるチャンネルのチャンネルレベルを表示する探索チャンネルレベル表示部17<sub>5</sub>と、探索実行ボタン17<sub>6</sub>とより構成されている。

【0045】なお、この探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>で選択できるチャンネル種別には次のものがある。

- 1) AD/DD
- 2) INPUT
- 3) BUS
- 4) MATRIX
- 5) TB/DD
- 6) TB/OSC
- 7) ANN
- 8) AIR-L
- 9) AIR-R

【0046】また、信号経路表示パネル18は、起点とするチャンネルと接続関係にあるAD/DDチャンネルを表示するAD/DDチャンネル表示部18<sub>1</sub>と、起点とするチャンネルと接続関係にあるINPUTチャンネルを表示するINPUTチャンネル表示部18<sub>2</sub>、起点とするチャンネルと接続関係にあるBUSチャンネルを表示するBUSチャンネル表示部18<sub>3</sub>、起点とするチャンネルと接続関係にあるMATRIXチャンネルを表示するMATRIXチャンネル表示部18<sub>4</sub>及び起点とするチャンネルと接続関係にあるDD/ADチャンネルを表示するDD/ADチャンネル表示部18<sub>5</sub>とより構成されている。

【0047】次に、任意な1チャンネル(CH)を起点とした信号の接続状態を探索する場合の作用を説明すると、まず図3に示すナビゲーション画面に表示されている探索チャンネルパネル17の探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>で例えばINPUTを選択する。

【0048】次に、探索チャンネル番号スピンエディット17<sub>2</sub>に起点となる任意な1チャンネルの番号を入力して、探索実行ボタン17<sub>6</sub>をクリックすると、制御手段8はINPUTを起点とした任意な1チャンネルの接続を探索して、その結果を図3に示すようにナビゲーション画面の信号経路表示パネル18の下側に表示する。

【0049】この場合、AD/DDチャンネル表示部18<sub>1</sub>にはチャンネル番号1とチャンネル名称AD/DD1が表示され、INPUTチャンネル表示部18<sub>2</sub>にはリファレンス名称V001とチャンネル名称1001とフェーダレベルM1が表示され、BUSチャンネル表示部18<sub>3</sub>にはリファレンス名称GF01とチャンネル名称B001が表示され、MATRIXチャンネル表示部18<sub>4</sub>にはリファレンス名称X001とチャンネル名称X001が表示される。そして、AD/DDチャンネル表示部18<sub>1</sub>とINPUTチャンネル表示部18<sub>2</sub>とBUSチャンネル表示部18<sub>3</sub>とMATRIXチャンネル表示部18<sub>4</sub>とDD/ADチャンネル表示部18<sub>5</sub>との間には接続部である接続経路(ルート)Rが表示される。

【0050】また、探索チャンネル名称表示部17<sub>3</sub>には、探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>と、探索チャンネル番号スピンエディット17<sub>2</sub>で指定したチャンネル名称が表示される。

【0051】また、探索チャンネルON/OFF表示部17<sub>4</sub>には、探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>と、探索チャンネル番号スピンエディット17<sub>2</sub>で指定されたチャンネルのON、OFF状態が表示され、同時に探索チャンネルレベル表示部17<sub>5</sub>にはチャンネルレベルが表示される。

【0052】これによって、使用者は任意な1チャンネルを起点とした信号の接続状態をナビゲーション画面を見ることにより容易に確認することができる。

【0053】なお、図4は探索チャンネル種別ドロップダウンコンボ17<sub>1</sub>に「ANN」を、また図5は「AIR-L」を入力して探索した際の探索結果が表示されたナビゲーション画面を示す。

【0054】また、上記した実施の形態では、探索したチャンネルのミキシングレベルを、探索チャンネルパネル17の探索チャンネルレベル表示部17<sub>5</sub>に表示したが、各信号処理部間を接続する接続部である接続経路(ルート)Rを、レベル調整手段により調整されたレベルに応じて線幅を可変することにより表示したり、線色を変えることにより表示するようにしてもよい。

【0055】さらに、上記した実施の形態では、ナビゲーション装置を備えたオーディオミキシングシステムについて説明したが、この実施の形態になるオーディオミキシングシステムを、ネットワークにより接続された外部機器を含めた音響システムに適用して、システム全体のミキシング状態を画面表示するようにしてもよい。

【0056】

【発明の効果】以上詳述したように、本発明に係るオーディオミキシングシステムのナビゲーション装置によれば、音声入力ラインより入力された複数チャンネルのオーディオ信号を信号処理して音声出力ラインへ出力する信号処理手段の信号処理部を指示手段により指示することにより、各信号処理部の接続状態が表示手段に画面表示されるため、表示手段の画面を見ることにより、現在のミキシング状態や、任意のチャンネルに着目したミキシング状態及び接続されている各チャンネルの状態が容易に確認できるようになる。

【0057】また、各信号処理部を接続する接続部を、ミキシングレベルに応じて線幅や線色を変えることにより、視覚的にミキシングレベルが確認できるため、さらに操作が容易となると共に、各信号処理部の接続状態を表示する画面の一部に、各信号処理部の制御状態を併せて表示することにより、画面を一目するだけで、ミキシング状態と制御状態を確認することができる。

【0058】また、本発明に係るオーディオミキシングシステムのナビゲーション方法によれば、音声入力ライ

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ンより入力された複数チャンネルのオーディオ信号を信号処理して音声出力ラインへ出力する信号処理工程の信号処理部を指示工程により指示することにより、各信号処理部の接続状態が表示工程に画面表示されるため、表示工程の画面を見ることにより、現在のミキシング状態や、任意のチャンネルに着目したミキシング状態及び接続されている各チャンネルの状態が容易に確認できるようになる。

【図面の簡単な説明】

【図1】オーディオミキシングシステムの平面図

【図2】本発明に係るオーディオミキシングシステムのナビゲーション装置のブロック図

【図3】同オーディオミキシングシステムのナビゲーション装置の表示画面を示す説明図

【図4】同オーディオミキシングシステムのナビゲーション装置の表示画面を示す説明図

【図5】同オーディオミキシングシステムのナビゲーション装置の表示画面を示す説明図

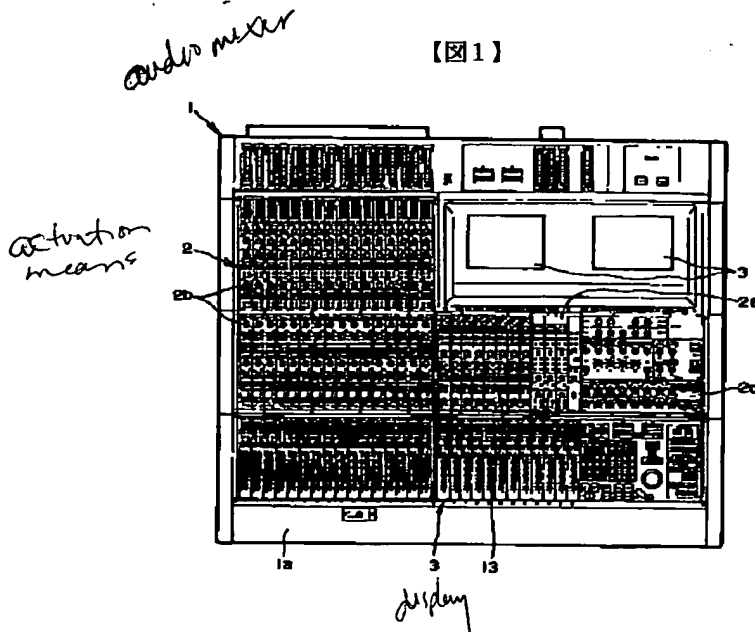
【符号の説明】

- 1 オーディオミキシングシステム本体
- 1a 盤面
- 2 操作手段
- 2b ミキシング制御手段
- 2c ミキシング制御手段
- 2e マトリックス操作手段
- 3 表示手段

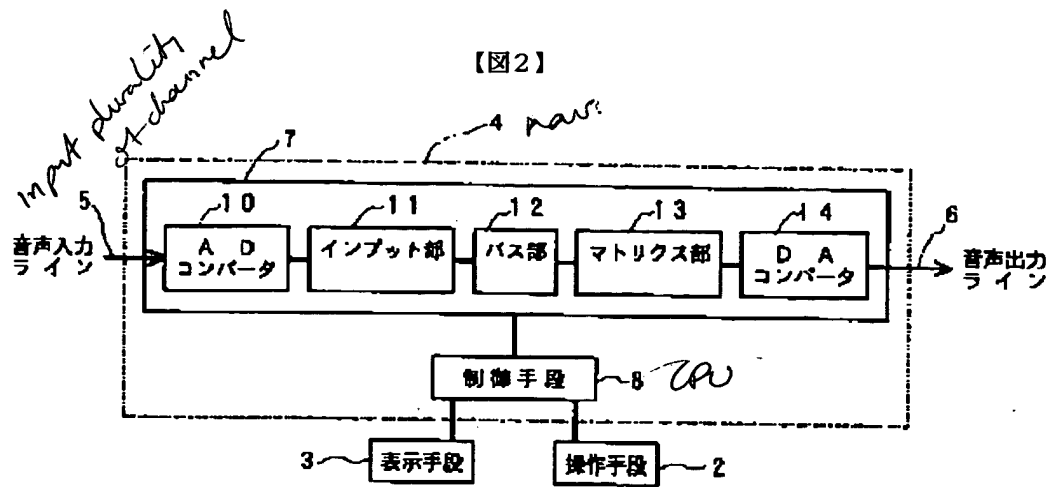
10

- 4 ナビゲーション装置
- 5 音声入力ライン
- 6 音声出力ライン
- 7 信号処理手段
- 8 制御手段
- 10 ADコンバータ
- 11 インプット部
- 12 バス部
- 13 マトリックス部
- 14 DAコンバータ
- 17 探索チャンネルパネル
- 17<sub>1</sub> 探索チャンネル種別ドロップダウンコンボ（指示手段）
- 17<sub>2</sub> 探索チャンネル番号スピンエディット（指示手段）
- 17<sub>3</sub> 探索チャンネル名称表示部
- 17<sub>4</sub> 探索チャンネルON/OFF表示部
- 17<sub>5</sub> 探索チャンネルレベル表示部
- 17<sub>6</sub> 探索実行ボタン
- 20 18 信号経路表示パネル
- 18<sub>1</sub> AD/DDチャンネル表示部
- 18<sub>2</sub> INPUTチャンネル表示部
- 18<sub>3</sub> BUSチャンネル表示部
- 18<sub>4</sub> MATRIXチャンネル表示部
- 18<sub>5</sub> DD/ADチャンネル表示部
- R 接続経路（ルート）（接続部）

【図1】

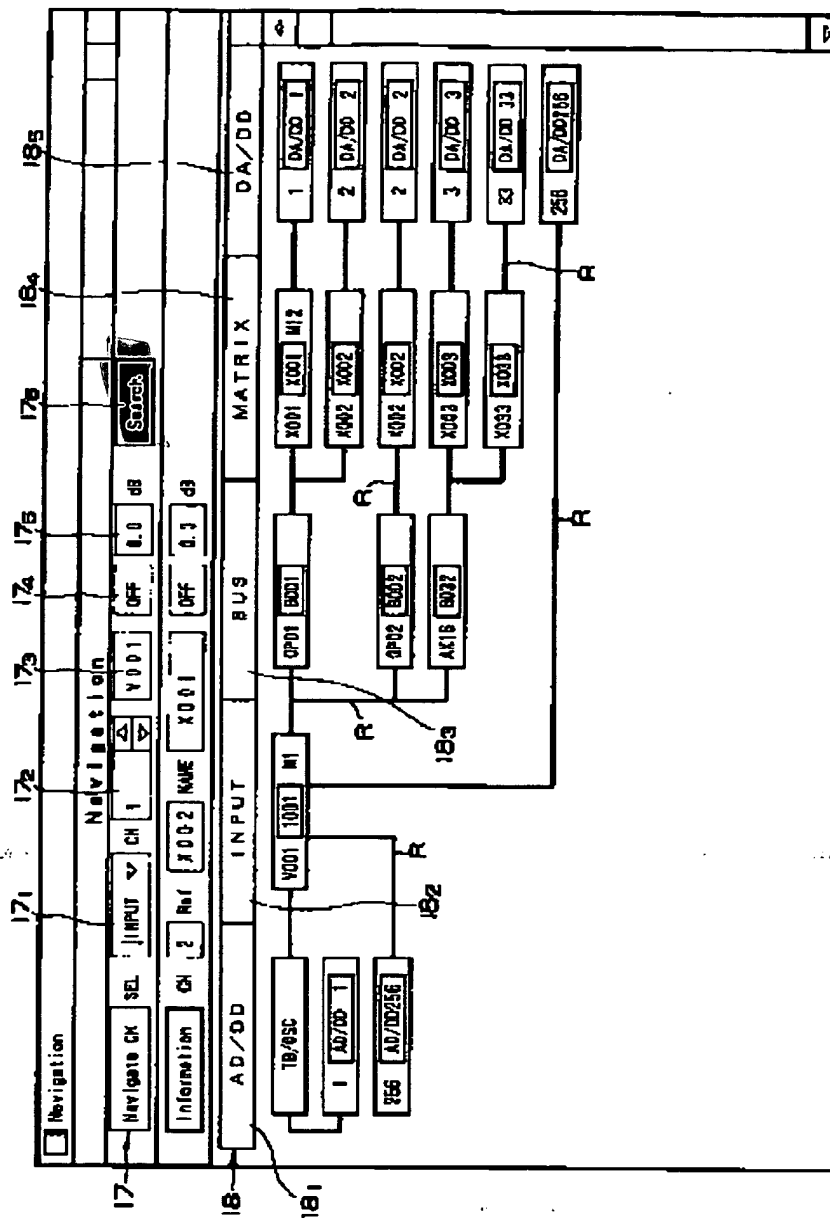




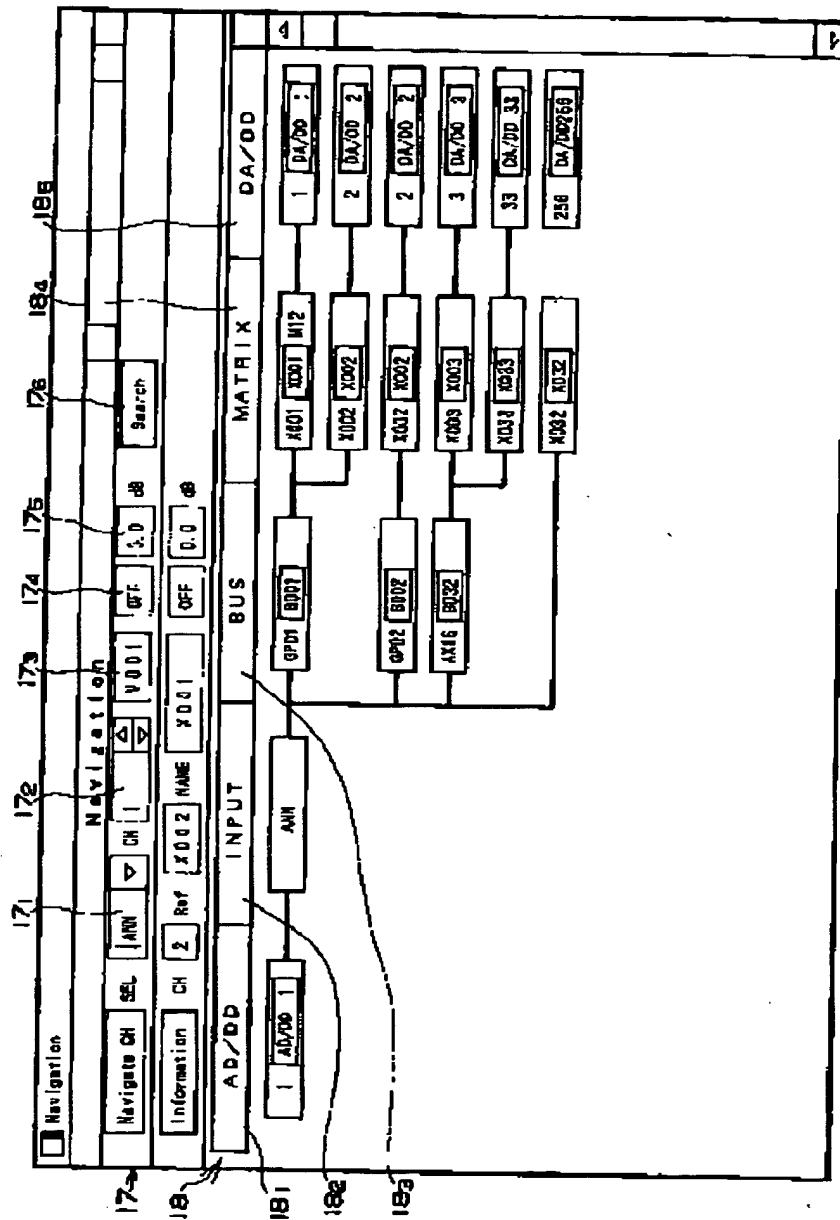


- |    |                  |                 |                            |                 |                  |
|----|------------------|-----------------|----------------------------|-----------------|------------------|
| 1  | オーディオミキシングシステム本体 | 8               | 制御手段                       | 17 <sub>4</sub> | 選択チャンネルON/OFF表示部 |
| 1a | 画面               | 10              | ADコンバータ                    | 17 <sub>5</sub> | 検索チャンネルレベル表示部    |
| 2  | 操作手段             | 11              | インプット部                     | 17 <sub>6</sub> | 検索実行ボタン          |
| 2b | ミキシング制御手段        | 12              | バス部                        | 18              | 信号経路表示パネル        |
| 2c | ミキシング制御手段        | 13              | マトリックス部                    | 18 <sub>1</sub> | AD/DDチャンネル表示部    |
| 2d | マトリックス操作手段       | 14              | DAコンバータ                    | 18 <sub>2</sub> | INPUTチャンネル表示部    |
| 3  | 表示手段             | 17              | 検索チャンネルパネル                 | 18 <sub>3</sub> | BUSチャンネル表示部      |
| 4  | ナビゲーション装置        | 17 <sub>1</sub> | 検索チャンネル種別ドロップダウンコンボ (指示手段) | 18 <sub>4</sub> | MATRIXチャンネル表示部   |
| 5  | 音声入力ライン          | 17 <sub>2</sub> | 検索チャンネル番号スピンエディット (指示手段)   | 18 <sub>5</sub> | DA/DDチャンネル表示部    |
| 6  | 音声出力ライン          | 17 <sub>3</sub> | 検索チャンネル名称表示部               | R               | 接続経路 (ルート) (接続部) |
| 7  | 信号処理手段           |                 |                            |                 |                  |

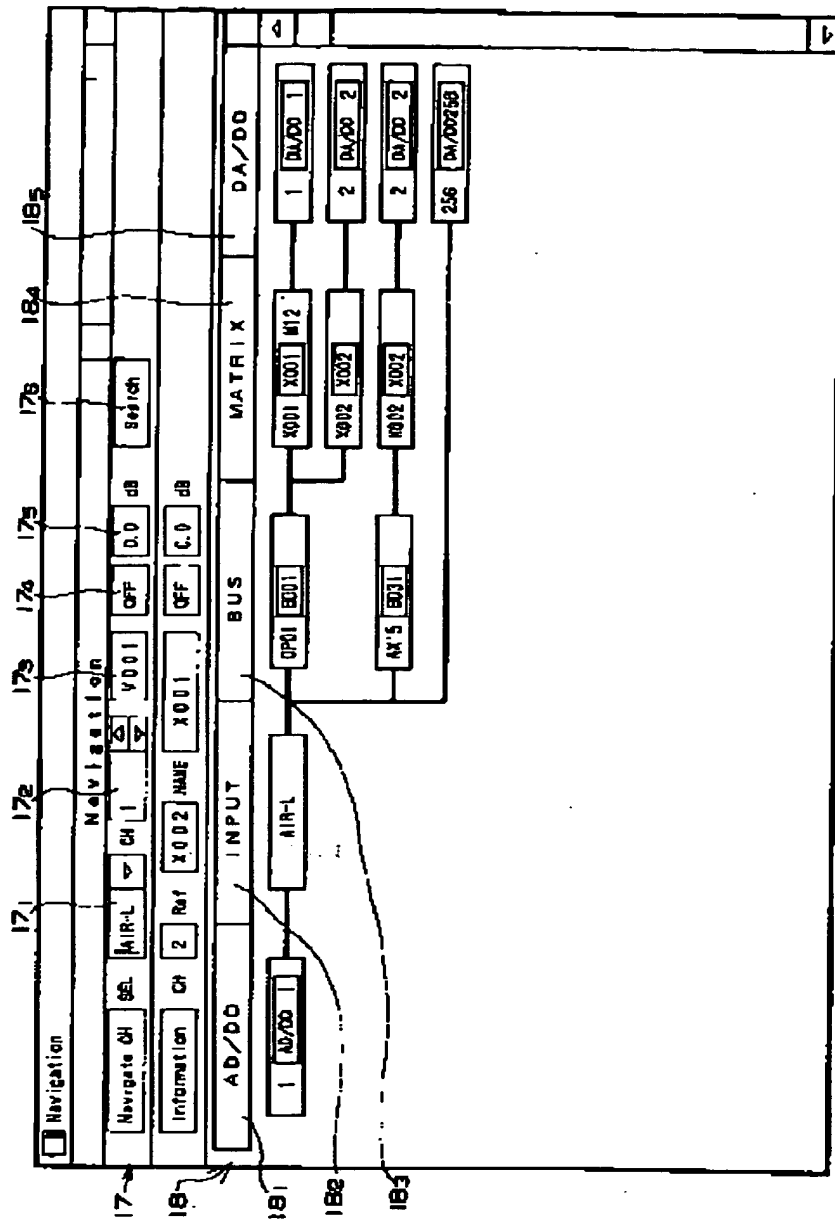
【図3】



【図4】



【図5】



CLAIMS

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[Claim(s)]

[Claim 1] The signal-processing means of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and is outputted from voice output Rhine, The control means which controls the connection which connects between said two or more signal-processing sections which constitute said signal-processing means, and these signal-processing section, It has a directions means to give control lead to said control means, and the display means which carries out a screen display of the control state of said control means. Said control means searches the condition of said connection between said signal-processing sections by specifying said signal-processing section of said signal-processing means with said directions means. Navigation equipment of the audio mixing system characterized by carrying out a screen display of the connection condition between said signal-processing sections to said display means.

[Claim 2] The signal-processing means of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and adjusts mixing level with a level adjustment means, and is outputted from said voice output Rhine, The control means which controls the connection which connects between said two or more signal-processing sections which constitute said signal-processing means, and these signal-processing section, and said level adjustment means, It has a directions means to give control lead to said control means, and the display means which carries out a screen display of the control state of said control means. Said control means searches the connection condition of said connection between said signal-processing sections, and the level condition of said level adjustment means by specifying said signal-processing section of said signal-processing means with said directions means. Navigation equipment of the audio mixing system characterized by carrying out a screen display of the connection condition of said connection between said signal-processing sections, and the level condition of said level adjustment means to said display means.

[Claim 3] Navigation equipment of the audio mixing system according to claim 2 characterized by carrying out adjustable [ of the line breadth of said connection ] according to the level condition of a level adjustment means in case a screen display of the connection condition of the connection between each signal-processing section is carried out to a display means.

[Claim 4] Navigation equipment of the audio mixing system according to claim 2 characterized by changing the line color of said connection according to the level condition of a level adjustment means in case a screen display of the connection condition of the connection between each signal-processing section is carried out to a display means.

[Claim 5] Navigation equipment of the audio mixing system according to claim 1 characterized by displaying the control state of each of said signal-processing section on some screens of said display means in case a screen display of the connection condition of the connection of each signal-processing section is carried out to a display means.

[Claim 6] Navigation equipment of the audio mixing system according to claim 5 by which a control means performs control by directing modification of the control state of

the signal-processing section or a connection from a directions means.

[Claim 7] The signal-processing process of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and is outputted from voice output Rhine, The control process which controls the connection which connects between said two or more signal-processing sections which constitute said signal-processing process, and these signal-processing section, It has the directions process which gives control lead to said control process, and the display process which carries out a screen display of the control state of said control process. Said control process searches the condition of said connection between said signal-processing sections by specifying said signal-processing section of said signal-processing process at said directions process. The navigation approach of the audio mixing system characterized by carrying out a screen display of the connection condition between said signal-processing sections to said display process.

[Claim 8] The signal-processing process of the body of an audio mixer which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and adjusts mixing level according to a level adjustment process, and is outputted from said voice output Rhine, The control process which controls the connection which connects between said two or more signal-processing sections which constitute said signal-processing process, and these signal-processing section, and said level adjustment process, It has the directions process which gives control lead to said control process, and the display process which carries out a screen display of the control state of said control process. Said control process searches the connection condition of said connection between said signal-processing sections, and the level condition of said level adjustment process by specifying said signal-processing section of said signal-processing process at said directions process. The navigation approach of the audio mixing system characterized by carrying out a screen display of the connection condition of said connection between said signal-processing sections, and the level condition of said level adjustment process to said display process.

[Claim 9] The navigation approach of the audio mixing system according to claim 8 characterized by carrying out adjustable [ of the line breadth of said connection ] according to the level condition of a level adjustment process in case a screen display of the connection condition of the connection between each signal-processing section is carried out to a display process.

[Claim 10] The navigation approach of the audio mixing system according to claim 8 characterized by changing the line color of said connection according to the level condition of a level adjustment process in case a screen display of the connection condition of the connection between each signal-processing section is carried out to a display process.

[Claim 11] The navigation approach of the audio mixing system according to claim 7 characterized by displaying the control state of each of said signal-processing section on some screens of said display process in case a screen display of the connection condition of the connection of each signal-processing section is carried out to a display process.

[Claim 12] The navigation approach of an audio mixing system according to claim 11 that a control process performs control by directing modification of the control state of the signal-processing section or a connection from a directions process.

## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] The inputted audio signal is mixed how and this invention relates [ via which root it is outputted, and ] to the navigation equipment and the navigation approach of an audio mixing system which are displayed on a screen.

[0002]

[Description of the Prior Art] Although the audio mixing system which mixes two or more audio signals and is outputted to an audio equipment is a thing indispensable to a sound facility, it needs skill for also many channelizing the audio signal which an audio mixing system mixes, having still more complicated composition -- many control units are prepared on the face of a board of an audio mixing system -- with growing gigantic of a sound system, and operating this in recent years.

[0003] Moreover, when mixing the inputted audio signal by the audio mixing system and outputting it to a predetermined audio equipment, the inputted audio signal is mixed how, and it is necessary to operate the control unit on the face of a board, always grasping via which root it is outputted to the audio equipment.

[0004]

[Problem(s) to be Solved by the Invention] However, in the conventional audio mixing system, since it depended on experience and storage of a user and the control unit on the face of a board was operated, there was a trouble of having mixed an input signal accidentally or being easy to generate the mistake of outputting the mixed signal to another audio equipment accidentally by overlooking of a user, a misapprehension, etc.

[0005] Moreover, by experience and storage of a user, when the channel mixed by growing gigantic of a system increased, in order to exceed the manageable range, it got confused, without the ability of a user grasping a current mixing condition, and there was also a trouble of normal mixing actuation becoming impossible etc.

[0006] Since an audio signal is digitized and mixing processing was performed especially more often recently, compared with the analog mixer with which it is lost that the situation of processing is altogether displayed on the face of a board, consequently all situations are displayed, grasp of a situation became increasingly difficult, a user's burden increased, and there was also a trouble of a user getting tired at an early stage.

[0007] This invention is made paying attention to this conventional trouble. Via which root are the current mixing condition and the mixed signal outputted by the place made into the 1st purpose to offer the navigation equipment of the audio mixing system which can be easily checked by the screen display?

[0008] Moreover, via which root are the current mixing condition and the mixed signal outputted by the place made into the 2nd purpose of this invention to offer the navigation approach of the audio mixing system which can be easily checked by the screen display?

[0009]

[Means for Solving the Problem] In order to attain the 1st above-mentioned purpose, the navigation equipment of the audio mixing system concerning this invention By directing the signal-processing section of a signal-processing means to process the audio signal of two or more channels inputted from voice input Rhine, and to output to voice output Rhine, with a directions means It is what was made to carry out a screen display of the

connection condition of each signal-processing section to a display means, and the mixing condition which paid its attention to a current mixing condition and current arbitrary channels can check now easily by seeing a screen.

[0010] Moreover, in order to attain the 2nd above-mentioned purpose, the navigation approach of the audio mixing system concerning this invention is what was made to carry out a screen display of the connection condition of each signal processing section to a display process, and the mixing condition which paid its attention to a current mixing condition and current arbitrary channels can check it easily by seeing a screen.

[0011]

[Embodiment of the Invention] The navigation equipment of the audio mixing system concerning invention of claim 1 The signal-processing means of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and is outputted from voice output Rhine, The control means which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing means, and these signal-processing section, It has a directions means to give control lead to a control means, and the display means which carries out a screen display of the control state of a control means. A control means searches the condition of the connection between the signal-processing sections, and is made to carry out a screen display of the connection condition between the signal-processing sections to a display means by specifying the signal-processing section of a signal-processing means with a directions means.

[0012] By this configuration, while a mixing condition can check at a glance by seeing the screen displayed on the display means, arbitrary channels can be specified and the mixing condition of the channel can be checked.

[0013] Moreover, the navigation equipment of the audio mixing system concerning invention of claim 2 The signal-processing means of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and adjusts mixing level with a level adjustment means, and is outputted from said voice output Rhine, The control means which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing means, and these signal-processing section, and a level adjustment means, It has a directions means to give control lead to a control means, and the display means which carries out a screen display of the control state of a control means. A control means searches the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment means, and is made to carry out a screen display of the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment means to a display means by specifying the signal-processing section of a signal-processing means with a directions means.

[0014] By this configuration, while a mixing condition can check at a glance by seeing the screen displayed on the display means, arbitrary channels can be specified and the mixing condition and mixing level of the channel can be checked.

[0015] Moreover, in the navigation equipment of an audio mixer according to claim 2, in case the navigation equipment of the audio mixing system concerning invention of claim 3 carries out a screen display of the connection condition of the connection between each signal-processing section to a display means, it is made to carry out adjustable [ of the



line breadth of a connection ] according to the level condition of a level adjustment means.

[0016] Mixing level can be visually checked with the line breadth of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 2 and the same operation effectiveness can be done so by this configuration ], and a display means.

[0017] Moreover, in the navigation equipment of an audio mixing system according to claim 2, in case the navigation equipment of the audio mixing system concerning invention of claim 4 carries out a screen display of the connection condition of the connection between each signal-processing section to a display means, it changes the line color of a connection according to the level condition of a level adjustment means.

[0018] Mixing level can be visually checked by the color of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 2 and the same operation effectiveness can be done so by this configuration ], and a display means.

[0019] Moreover, in the navigation equipment of an audio mixing system according to claim 1, in case the navigation equipment of the audio mixing system concerning invention of claim 5 carries out a screen display of the connection condition of the connection of each signal-processing section to a display means, it displays the control state of each signal-processing section on some screens of a display means.

[0020] Since a mixing condition and the control state of each signal-processing section are displayed in that the above-mentioned operation effectiveness of invention of claim 1 and the same operation effectiveness can be done so by this configuration, and a single screen, it can check only by a mixing condition and a control state carrying out a one division of the screen.

[0021] Moreover, a control means is made to perform control because the navigation equipment of the audio mixing system concerning invention of claim 6 directs modification of the control state of the signal-processing section or a connection from a directions means in the navigation equipment of an audio mixing system according to claim 5.

[0022] Modification of the control state of about [ that the above-mentioned operation effectiveness of invention of claim 1 and the same operation effectiveness can be done so by this configuration ] and each signal-processing section can carry out now easily on a screen.

[0023] Moreover, the navigation approach of the audio mixing system concerning invention of claim 7 The signal-processing process of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and is outputted from voice output Rhine, The control process which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing process, and these signal-processing section, It has the directions process which gives control lead to a control process, and the display process which carries out a screen display of the control state of a control process. A control process searches the condition of the connection between the signal-processing sections, and was made to carry out a screen display of the connection condition between the signal-processing sections to a display process by specifying the signal-processing section of a signal-processing process at a directions

process.

[0024] Therefore, while a mixing condition can check at a glance by seeing the screen displayed on the display process, arbitrary channels can be specified and the mixing condition of the channel can be checked.

[0025] Moreover, the navigation approach of the audio mixing system concerning invention of claim 8 The signal-processing process of the body of an audio mixer which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and adjusts mixing level according to a level adjustment process, and is outputted from voice output Rhine, The control process which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing process, and these signal-processing section, and a level adjustment process, It has the directions process which gives control lead to a control process, and the display process which carries out a screen display of the control state of a control process. A control process searches the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment process, and was made to carry out a screen display of the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment process to a display process by specifying the signal-processing section of a signal-processing process at a directions process.

[0026] Therefore, while a mixing condition can check at a glance by seeing the screen displayed on the display process, arbitrary channels can be specified and the mixing condition and mixing level of the channel can be checked.

[0027] Moreover, in the navigation approach of an audio mixing system according to claim 8, when the navigation approach of the audio mixing system concerning invention of claim 9 carried out a screen display of the connection condition of the connection between each signal-processing section to a display process, it was made to carry out adjustable [ of the line breadth of a connection ] according to the level condition of a level adjustment process.

[0028] Therefore, mixing level can be visually checked with the line breadth of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 8 and the same operation effectiveness can be done so ], and a display means.

[0029] Moreover, in the navigation approach of an audio mixing system according to claim 8, when the navigation approach of the audio mixing system concerning invention of claim 10 carried out a screen display of the connection condition of the connection between each signal-processing section to a display process, it changed the line color of a connection according to the level condition of a level adjustment process.

[0030] Therefore, mixing level can be visually checked by the color of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 8 and the same operation effectiveness can be done so ], and a display process.

[0031] Moreover, in the navigation approach of an audio mixing system according to claim 7, when the navigation approach of the audio mixing system concerning invention of claim 11 carried out a screen display of the connection condition of the connection of each signal-processing section to a display process, it displayed the control state of each of said signal-processing section on some screens of a display process.

[0032] Therefore, since a mixing condition and the control state of each signal-processing section are displayed in that the above-mentioned operation effectiveness of invention of claim 7 and the same operation effectiveness can be done so, and a single screen, it can check only by a mixing condition and a control state carrying out a one division of the screen.

[0033] Moreover, the navigation approach of the audio mixing system concerning invention of claim 12 is directing modification of the control state of the signal-processing section or a connection from a directions process in the navigation approach of an audio mixing system according to claim 11, and a control process performs control.

[0034] Therefore, modification of the control state of about [ that the above-mentioned operation effectiveness of invention of claim 7 and the same operation effectiveness can be done so ] and each signal-processing section can carry out now easily on a screen.

[0035] Hereafter, the gestalt of operation of this invention is explained in full detail with reference to a drawing.

[0036] The top view of the audio mixing system by which drawing 1 was equipped with navigation equipment, and drawing 2 are the explanatory views of the display screen displayed on a display means the block diagram of navigation equipment, and below drawing 3.

[0037] In drawing 1, 1 is a body of an audio mixing system, the actuation means 2, the display means 3, etc. are formed in face-of-a-board 1a prepared in the top face of this body 1 of an audio mixing system, and navigation equipment 4 is held in the body 1 of an audio mixing system.

[0038] Navigation equipment 4 is constituted from a signal-processing means 7 to carry out mixing processing of the audio signal of the many channels inputted from voice input Rhine 5, and to output to voice output Rhine 6, and a control means 8 which consists of a CPU which controls this signal-processing means 7, as shown in drawing 2, and the actuation means 2 and the display means 3 are connected to the control means 8.

[0039] Moreover, the signal-processing means 7 consists of DA converter (signal-processing section) 14 which changes into an analog sound signal AD converter (signal-processing section) 10 which changes into a digital signal the analog sound signal inputted from voice input Rhine 5, and the digital signal outputted from the input section (signal-processing section) 11, the bus section (signal-processing section) 12, the matrix section (signal-processing section) 13, and the matrix section (signal-processing section) 13, and is outputted to voice output Rhine 6.

[0040] Moreover, matrix actuation means 2e which operates mixing control means 2c and the matrix section 13 which carry out mixing control of the signal outputted to the matrix section 13 from mixing control means 2b which carries out mixing control of the signal outputted to the bus section 12 from the input section 11, and the bus section 12 is prepared in the actuation means 2 formed in face-of-a-board 1a of the body 1 of an audio mixing

system. Moreover, switching control which carries out switching control of the signal outputted to DA converter 14 is performed using GUI (graphical user interface) from the switching control and the matrix section 13 which carry out switching control of the signal outputted to the input section 11 from AD converter 10.

[0041] On the other hand, a display means 3 to search for connection of a signal the condition of the present mixing and with a certain channel as the starting point consists of

liquid crystal displays (LCD), and can perform now the screen display shown below in drawing 3 .

[0042] Next, with reference to the screen display shown below in drawing 3 , the present mixing condition is displayed or the operation at the time of searching for the connection condition of a signal is explained.

[0043] On the navigation screen of the display means 3, the path display panel 18 is beforehand shown on the upper case by the retrieval channel panel 17 and the lower berth.

[0044] a signal path is checked on the retrieval channel panel 17 -- an origin -- retrieval channel classification drop down component stereo 171 which indicates the classification of a channel by selection retrieval channel number spin edit 172 which indicates the channel number by selection retrieval channel classification drop down component stereo 171 And retrieval channel number pin edit 172 from -- retrieval channel name display 173 which displays the channel name specified with the becoming directions means retrieval channel classification drop down component stereo 171 And retrieval channel number spin edit 172 Retrieval channel ON/OFF display 174 which displays the ON/OFF condition of the channel specified Retrieval channel classification drop down component stereo 171 And retrieval channel number spin edit 172 Retrieval channel level display 175 which displays the channel level of the channel specified Retrieval activation carbon button 176 It is constituted.

[0045] In addition, this retrieval channel classification drop down component stereo 171 There are the following in the channel classification which can be chosen.

1) AD/DD2INPUT3BUS4MATRIX5 TB/DD6 TB/OSC7ANN8 AIR-L9 AIR-R[0046] moreover, AD/DD channel display 181 which displays the channel which makes the signal path display panel 18 an origin, and the AD/DD channel which has a connection relation The INPUT channel display 182 which displays the channel made into an origin, and the INPUT channel which has a connection relation, The BUS channel display 183 which displays the channel made into an origin, and the BUS channel which has a connection relation, MATRIX channel display 184 which displays the channel made into an origin, and the MATRIX channel which has a connection relation And DD/AD channel display 185 which displays the channel made into an origin, and the DD/AD channel which has a connection relation It is constituted.

[0047] Next, retrieval channel classification drop down component stereo 171 of the retrieval channel panel 17 currently displayed on the navigation screen first shown in drawing 3 if the operation in the case of searching for the connection condition of the signal on the basis of one arbitrary channel (CH) is explained For example, INPUT is chosen.

[0048] Next, retrieval channel number spin edit 172 The arbitrary numbers of one channel used as an origin are inputted, and it is the retrieval activation carbon button 176. If it clicks, a control means 8 will search for the arbitrary connection of one channel on the basis of INPUT, and as shown in drawing 3 , it will display the result on the signal path display-panel 18 bottom of a navigation screen.

[0049] in this case, AD/DD channel display 181 \*\*\*\* -- a channel number 1 and channel name AD/DD1 display -- having -- INPUT channel display 182 \*\*\*\* -- the reference name V001, the channel name 1001, and the fader level M1 display -- having -- BUS channel display 183 \*\*\*\* -- the reference name GF 01 and the channel name B001

display -- having -- MATRIX channel display 184 \*\*\*\* -- the reference name X001 and the channel name X001 are displayed. And AD/DD channel display 181 INPUT channel display 182 BUS channel display 183 MATRIX channel display 184 DD/AD channel display 185 In between, the connection path (root) R which is a connection is displayed. [0050] moreover, retrieval channel name display 173 \*\*\*\* -- retrieval channel classification drop down component stereo 171 Retrieval channel number spin edit 172 The specified channel name is displayed.

[0051] moreover, retrieval channel ON/OFF display 174 \*\*\*\* -- retrieval channel classification drop down component stereo 171 Retrieval channel number spin edit 172 ON of the specified channel and an OFF condition display -- having -- coincidence -- retrieval channel level display 175 \*\*\*\* -- channel level is displayed.

[0052] By this, a user can check easily the connection condition of the signal on the basis of one arbitrary channel by seeing a navigation screen.

[0053] In addition, drawing 4 is the retrieval channel classification drop down component stereo 171. The navigation screen where the retrieval result at the time of drawing 5 inputting "AIR-L" and searching for "ANN" again was displayed is shown.

[0054] Moreover, it is the retrieval channel level display 175 of the retrieval channel panel 17 about the mixing level of the channel for which the above-mentioned gestalt of operation was searched. Although displayed, you may make it display by displaying by carrying out adjustable [ of the line breadth ] according to the level adjusted by the level adjustment means in the connection path (root) R which is the connection which connects between each signal-processing section, or changing a line color.

[0055] Furthermore, although the above-mentioned gestalt of operation explained the audio mixing system equipped with navigation equipment, it applies to a sound system including the external instrument to which the audio mixing system which becomes the gestalt of this operation was connected by the network, and may be made to carry out a screen display of the mixing condition of the whole system.

[0056]

[Effect of the Invention] As explained in full detail above, according to the navigation equipment of the audio mixing system concerning this invention By directing the signal-processing section of a signal-processing means to carry out signal processing of the audio signal of two or more channels inputted from voice input Rhine, and to output to voice output Rhine, with a directions means Since a screen display of the connection condition of each signal-processing section is carried out to a display means, a current mixing condition, and the mixing condition which paid its attention to the channel of arbitration and the condition of each channel connected can check easily by seeing the screen of a display means.

[0057] Moreover, since mixing level can check visually the connection which connects each signal-processing section by changing line breadth and a line color according to mixing level, while it becomes still easier to operate it, a mixing condition and a control state can be checked only by carrying out a one division of the screen by displaying the control state of each signal-processing section collectively on some screens which display the connection condition of each signal-processing section.

[0058] Moreover, according to the navigation approach of the audio mixing system concerning this invention By directing the signal-processing section of the signal-processing process which carries out signal processing of the audio signal of two or more

channels inputted from voice input Rhine, and is outputted to voice output Rhine according to a directions process Since a screen display of the connection condition of each signal-processing section is carried out to a display process, a current mixing condition, and the mixing condition which paid its attention to the channel of arbitration and the condition of each channel connected can check easily by seeing the screen of a display process.

## TECHNICAL FIELD

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[Field of the Invention] The inputted audio signal is mixed how and this invention relates [ via which root it is outputted, and ] to the navigation equipment and the navigation approach of an audio mixing system which are displayed on a screen.

## PRIOR ART

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[Description of the Prior Art] Although the audio mixing system which mixes two or more audio signals and is outputted to an audio equipment is a thing indispensable to a sound facility, it needs skill for also many channelizing the audio signal which an audio mixing system mixes, having still more complicated composition -- many control units are prepared on the face of a board of an audio mixing system -- with growing gigantic of a sound system, and operating this in recent years.

[0003] Moreover, when mixing the inputted audio signal by the audio mixing system and outputting it to a predetermined audio equipment, the inputted audio signal is mixed how, and it is necessary to operate the control unit on the face of a board, always grasping via which root it is outputted to the audio equipment.

## EFFECT OF THE INVENTION

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[Effect of the Invention] As explained in full detail above, according to the navigation equipment of the audio mixing system concerning this invention, carry out signal processing of the audio signal of two or more channels inputted from voice input Rhine. Since a screen display of the connection condition of each signal-processing section is carried out to a display means by directing the signal-processing section of a signal-processing means to output to voice output Rhine, with a directions means, a current mixing condition, and the mixing condition which paid its attention to the channel of arbitration and the condition of each channel connected can check easily by seeing the screen of a display means.

[0057] Moreover, since mixing level can check visually the connection which connects each signal-processing section by changing line breadth and a line color according to mixing level, while it becomes still easier to operate it, a mixing condition and a control state can be checked only by carrying out a one division of the screen by displaying the control state of each signal-processing section collectively on some screens which display the connection condition of each signal-processing section.

[0058] Moreover, according to the navigation approach of the audio mixing system concerning this invention, carry out signal processing of the audio signal of two or more channels inputted from voice input Rhine. Since a screen display of the connection

condition of each signal-processing section is carried out to a display process by directing the signal-processing section of the signal-processing process outputted to voice output Rhine according to a directions process, a current mixing condition, and the mixing condition which paid its attention to the channel of arbitration and the condition of each channel connected can check easily by seeing the screen of a display process.

## TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, in the conventional audio mixing system, since it depended on experience and storage of a user and the control unit on the face of a board was operated, there was a trouble of having mixed an input signal accidentally or being easy to generate the mistake of outputting the mixed signal to another audio equipment accidentally by overlooking of a user, a misapprehension, etc. [0005] Moreover, by experience and storage of a user, when the channel mixed by growing gigantic of a system increased, in order to exceed the manageable range, it got confused, without the ability of a user grasping a current mixing condition, and there was also a trouble of normal mixing actuation becoming impossible etc.

[0006] Since an audio signal is digitized and mixing processing was performed especially more often recently, compared with the analog mixer with which it is lost that the situation of processing is altogether displayed on the face of a board, consequently all situations are displayed, grasp of a situation became increasingly difficult, a user's burden increased, and there was also a trouble of a user getting tired at an early stage.

[0007] This invention is made paying attention to this conventional trouble. Via which root are the current mixing condition and the mixed signal outputted by the place made into the 1st purpose to offer the navigation equipment of the audio mixing system which can be easily checked by the screen display?

[0008] Moreover, via which root are the current mixing condition and the mixed signal outputted by the place made into the 2nd purpose of this invention to offer the navigation approach of the audio mixing system which can be easily checked by the screen display?

## MEANS

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[Means for Solving the Problem] In order to attain the 1st above-mentioned purpose, the navigation equipment of the audio mixing system concerning this invention By directing the signal-processing section of a signal-processing means to process the audio signal of two or more channels inputted from voice input Rhine, and to output to voice output Rhine, with a directions means It is what was made to carry out a screen display of the connection condition of each signal-processing section to a display means, and the mixing condition which paid its attention to a current mixing condition and current arbitrary channels can check now easily by seeing a screen.

[0010] Moreover, in order to attain the 2nd above-mentioned purpose, the navigation approach of the audio mixing system concerning this invention is what was made to carry out a screen display of the connection condition of each signal processing section to a display process, and the mixing condition which paid its attention to a current mixing condition and current arbitrary channels can check it easily by seeing a screen.

[0011]

[Embodiment of the Invention] The navigation equipment of the audio mixing system concerning invention of claim 1 The signal-processing means of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and is outputted from voice output Rhine, The control means which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing means, and these signal-processing section, It has a directions means to give control lead to a control means, and the display means which carries out a screen display of the control state of a control means. A control means searches the condition of the connection between the signal-processing sections, and is made to carry out a screen display of the connection condition between the signal-processing sections to a display means by specifying the signal-processing section of a signal-processing means with a directions means.

[0012] By this configuration, while a mixing condition can check at a glance by seeing the screen displayed on the display means, arbitrary channels can be specified and the mixing condition of the channel can be checked.

[0013] Moreover, the navigation equipment of the audio mixing system concerning invention of claim 2 The signal-processing means of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and adjusts mixing level with a level adjustment means, and is outputted from said voice output Rhine, The control means which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing means, and these signal-processing section, and a level adjustment means, It has a directions means to give control lead to a control means, and the display means which carries out a screen display of the control state of a control means. A control means searches the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment means, and is made to carry out a screen display of the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment means to a display means by specifying the signal-processing section of a signal-processing means with a directions means.

[0014] By this configuration, while a mixing condition can check at a glance by seeing the screen displayed on the display means, arbitrary channels can be specified and the mixing condition and mixing level of the channel can be checked.

[0015] Moreover, in the navigation equipment of an audio mixer according to claim 2, in case the navigation equipment of the audio mixing system concerning invention of claim 3 carries out a screen display of the connection condition of the connection between each signal-processing section to a display means, it is made to carry out adjustable [ of the line breadth of a connection ] according to the level condition of a level adjustment means.

[0016] Mixing level can be visually checked with the line breadth of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 2 and the same operation effectiveness can be done so by this configuration ], and a display means.

[0017] Moreover, in the navigation equipment of an audio mixing system according to claim 2, in case the navigation equipment of the audio mixing system concerning invention of claim 4 carries out a screen display of the connection condition of the



connection between each signal-processing section to a display means, it changes the line color of a connection according to the level condition of a level adjustment means.

[0018] Mixing level can be visually checked by the color of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 2 and the same operation effectiveness can be done so by this configuration ], and a display means.

[0019] Moreover, in the navigation equipment of an audio mixing system according to claim 1, in case the navigation equipment of the audio mixing system concerning invention of claim 5 carries out a screen display of the connection condition of the connection of each signal-processing section to a display means, it displays the control state of each signal-processing section on some screens of a display means.

[0020] Since a mixing condition and the control state of each signal-processing section are displayed in that the above-mentioned operation effectiveness of invention of claim 1 and the same operation effectiveness can be done so by this configuration, and a single screen, it can check only by a mixing condition and a control state carrying out a one division of the screen.

[0021] Moreover, a control means is made to perform control because the navigation equipment of the audio mixing system concerning invention of claim 6 directs modification of the control state of the signal-processing section or a connection from a directions means in the navigation equipment of an audio mixing system according to claim 5.

[0022] Modification of the control state of about [ that the above-mentioned operation effectiveness of invention of claim 1 and the same operation effectiveness can be done so by this configuration ] and each signal-processing section can carry out now easily on a screen.

[0023] Moreover, the navigation approach of the audio mixing system concerning invention of claim 7 The signal-processing process of the body of an audio mixing system which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and is outputted from voice output Rhine, The control process which controls the connection which connects between two or more signal-processing sections which constitute a signal-processing process, and these signal-processing section, It has the directions process which gives control lead to a control process, and the display process which carries out a screen display of the control state of a control process. A control process searches the condition of the connection between the signal-processing sections, and was made to carry out a screen display of the connection condition between the signal-processing sections to a display process by specifying the signal-processing section of a signal-processing process at a directions process.

[0024] Therefore, while a mixing condition can check at a glance by seeing the screen displayed on the display process, arbitrary channels can be specified and the mixing condition of the channel can be checked.

[0025] Moreover, the navigation approach of the audio mixing system concerning invention of claim 8 The signal-processing process of the body of an audio mixer which carries out signal processing of the audio signal inputted from voice input Rhine by two or more signal-processing sections, and adjusts mixing level according to a level adjustment process, and is outputted from voice output Rhine, The control process which

controls the connection which connects between two or more signal-processing sections which constitute a signal-processing process, and these signal-processing section, and a level adjustment process, It has the directions process which gives control lead to a control process, and the display process which carries out a screen display of the control state of a control process. A control process searches the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment process, and was made to carry out a screen display of the connection condition of the connection between the signal-processing sections, and the level condition of a level adjustment process to a display process by specifying the signal-processing section of a signal-processing process at a directions process.

[0026] Therefore, while a mixing condition can check at a glance by seeing the screen displayed on the display process, arbitrary channels can be specified and the mixing condition and mixing level of the channel can be checked.

[0027] Moreover, in the navigation approach of an audio mixing system according to claim 8, when the navigation approach of the audio mixing system concerning invention of claim 9 carried out a screen display of the connection condition of the connection between each signal-processing section to a display process, it was made to carry out adjustable [ of the line breadth of a connection ] according to the level condition of a level adjustment process.

[0028] Therefore, mixing level can be visually checked with the line breadth of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 8 and the same operation effectiveness can be done so ], and a display means.

[0029] Moreover, in the navigation approach of an audio mixing system according to claim 8, when the navigation approach of the audio mixing system concerning invention of claim 10 carried out a screen display of the connection condition of the connection between each signal-processing section to a display process, it changed the line color of a connection according to the level condition of a level adjustment process.

[0030] Therefore, mixing level can be visually checked by the color of the connection by which a screen display was carried out to about [ that the above-mentioned operation effectiveness of invention of claim 8 and the same operation effectiveness can be done so ], and a display process.

[0031] Moreover, in the navigation approach of an audio mixing system according to claim 7, when the navigation approach of the audio mixing system concerning invention of claim 11 carried out a screen display of the connection condition of the connection of each signal-processing section to a display process, it displayed the control state of each of said signal-processing section on some screens of a display process.

[0032] Therefore, since a mixing condition and the control state of each signal-processing section are displayed in that the above-mentioned operation effectiveness of invention of claim 7 and the same operation effectiveness can be done so, and a single screen, it can check only by a mixing condition and a control state carrying out a one division of the screen.

[0033] Moreover, the navigation approach of the audio mixing system concerning invention of claim 12 is directing modification of the control state of the signal-processing section or a connection from a directions process in the navigation approach of an audio mixing system according to claim 11, and a control process performs control.

[0034] Therefore, modification of the control state of about [ that the above-mentioned operation effectiveness of invention of claim 7 and the same operation effectiveness can be done so ] and each signal-processing section can carry out now easily on a screen.

[0035] Hereafter, the gestalt of operation of this invention is explained in full detail with reference to a drawing.

[0036] The top view of the audio mixing system by which drawing 1 was equipped with navigation equipment, and drawing 2 are the explanatory views of the display screen displayed on a display means the block diagram of navigation equipment, and below drawing 3.

[0037] In drawing 1, 1 is a body of an audio mixing system, the actuation means 2, the display means 3, etc. are formed in face-of-a-board 1a prepared in the top face of this body 1 of an audio mixing system, and navigation equipment 4 is held in the body 1 of an audio mixing system.

[0038] Navigation equipment 4 is constituted from a signal-processing means 7 to carry out mixing processing of the audio signal of the many channels inputted from voice input Rhine 5, and to output to voice output Rhine 6, and a control means 8 which consists of a CPU which controls this signal-processing means 7, as shown in drawing 2, and the actuation means 2 and the display means 3 are connected to the control means 8.

[0039] Moreover, the signal-processing means 7 consists of DA converter (signal-processing section) 14 which changes into an analog sound signal AD converter (signal-processing section) 10 which changes into a digital signal the analog sound signal inputted from voice input Rhine 5, and the digital signal outputted from the input section (signal-processing section) 11, the bus section (signal-processing section) 12, the matrix section (signal-processing section) 13, and the matrix section (signal-processing section) 13, and is outputted to voice output Rhine 6.

[0040] Moreover, matrix actuation means 2e which operates mixing control means 2c and the matrix section 13 which carry out mixing control of the signal outputted to the matrix section 13 from mixing control means 2b which carries out mixing control of the signal outputted to the bus section 12 from the input section 11, and the bus section 12 is prepared in the actuation means 2 formed in face-of-a-board 1a of the body 1 of an audio mixing system. Moreover, switching control which carries out switching control of the signal outputted to DA converter 14 is performed using GUI (graphical user interface) from the switching control and the matrix section 13 which carry out switching control of the signal outputted to the input section 11 from AD converter 10.

[0041] On the other hand, a display means 3 to search for connection of a signal the condition of the present mixing and with a certain channel as the starting point consists of liquid crystal displays (LCD), and can perform now the screen display shown below in drawing 3.

[0042] Next, with reference to the screen display shown below in drawing 3, the present mixing condition is displayed or the operation at the time of searching for the connection condition of a signal is explained.

[0043] On the navigation screen of the display means 3, the path display panel 18 is beforehand shown on the upper case by the retrieval channel panel 17 and the lower berth.

[0044] a signal path is checked on the retrieval channel panel 17 -- an origin -- retrieval channel classification drop down component stereo 171 which indicates the classification

of a channel by selection retrieval channel number spin edit 172 which indicates the channel number by selection retrieval channel classification drop down component stereo 171 And retrieval channel number pin edit 172 from -- retrieval channel name display 173 which displays the channel name specified with the becoming directions means retrieval channel classification drop down component stereo 171 And retrieval channel number spin edit 172 Retrieval channel ON/OFF display 174 which displays the ON/OFF condition of the channel specified Retrieval channel classification drop down component stereo 171 And retrieval channel number spin edit 172 Retrieval channel level display 175 which displays the channel level of the channel specified Retrieval activation carbon button 176 It is constituted.

[0045] In addition, this retrieval channel classification drop down component stereo 171 There are the following in the channel classification which can be chosen.

1) AD/DD2INPUT3BUS4MATRIX5 TB/DD6 TB/OSC7ANN8 AIR-L9 AIR-R[0046] moreover, AD/DD channel display 181 which displays the channel which makes the signal path display panel 18 an origin, and the AD/DD channel which has a connection relation The INPUT channel display 182 which displays the channel made into an origin, and the INPUT channel which has a connection relation, The BUS channel display 183 which displays the channel made into an origin, and the BUS channel which has a connection relation, MATRIX channel display 184 which displays the channel made into an origin, and the MATRIX channel which has a connection relation And DD/AD channel display 185 which displays the channel made into an origin, and the DD/AD channel which has a connection relation It is constituted.

[0047] Next, retrieval channel classification drop down component stereo 171 of the retrieval channel panel 17 currently displayed on the navigation screen first shown in drawing 3 if the operation in the case of searching for the connection condition of the signal on the basis of one arbitrary channel (CH) is explained For example, INPUT is chosen.

[0048] Next, retrieval channel number spin edit 172 The arbitrary numbers of one channel used as an origin are inputted, and it is the retrieval activation carbon button 176. If it clicks, a control means 8 will search for the arbitrary connection of one channel on the basis of INPUT, and as shown in drawing 3 , it will display the result on the signal path display-panel 18 bottom of a navigation screen.

[0049] in this case, AD/DD channel display 181 \*\*\*\* -- a channel number 1 and channel name AD/DD1 display -- having -- INPUT channel display 182 \*\*\*\* -- the reference name V001, the channel name 1001, and the fader level M1 display -- having -- BUS channel display 183 \*\*\*\* -- the reference name GF 01 and the channel name B001 display -- having -- MATRIX channel display 184 \*\*\*\* -- the reference name X001 and the channel name X001 are displayed. And AD/DD channel display 181 INPUT channel display 182 BUS channel display 183 MATRIX channel display 184 DD/AD channel display 185 In between, the connection path (root) R which is a connection is displayed.

[0050] moreover, retrieval channel name display 173 \*\*\*\* -- retrieval channel classification drop down component stereo 171 Retrieval channel number spin edit 172 The specified channel name is displayed.

[0051] moreover, retrieval channel ON/OFF display 174 \*\*\*\* -- retrieval channel classification drop down component stereo 171 Retrieval channel number spin edit 172 ON of the specified channel and an OFF condition display -- having -- coincidence --

retrieval channel level display 175.\*\*\*\* -- channel level is displayed.

[0052] By this, a user can check easily the connection condition of the signal on the basis of one arbitrary channel by seeing a navigation screen.

[0053] In addition, drawing 4 is the retrieval channel classification drop down component stereo 171. The navigation screen where the retrieval result at the time of drawing 5 inputting "AIR-L" and searching for "ANN" again was displayed is shown.

[0054] Moreover, it is the retrieval channel level display 175 of the retrieval channel panel 17 about the mixing level of the channel for which the above-mentioned gestalt of operation was searched. Although displayed, you may make it display by displaying by carrying out adjustable [ of the line breadth ] according to the level adjusted by the level adjustment means in the connection path (root) R which is the connection which connects between each signal-processing section, or changing a line color.

[0055] Furthermore, although the above-mentioned gestalt of operation explained the audio mixing system equipped with navigation equipment, it applies to a sound system including the external instrument to which the audio mixing system which becomes the gestalt of this operation was connected by the network, and may be made to carry out a screen display of the mixing condition of the whole system.

## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The top view of an audio mixing system

[Drawing 2] The block diagram of the navigation equipment of the audio mixing system concerning this invention

[Drawing 3] The explanatory view showing the display screen of the navigation equipment of this audio mixing system

[Drawing 4] The explanatory view showing the display screen of the navigation equipment of this audio mixing system

[Drawing 5] The explanatory view showing the display screen of the navigation equipment of this audio mixing system

[Description of Notations]

1 Body of Audio Mixing System

1a Face of a board

2 Actuation Means

2b Mixing control means

2c Mixing control means

2e Matrix actuation means

3 Display Means

4 Navigation Equipment

5 Voice Input Rhine

6 Voice Output Rhine

7 Signal-Processing Means

8 Control Means

10 AD Converter

11 Input Section

12 Bus Section

13 Matrix Section  
14 DA Converter  
17 Retrieval Channel Panel  
171 Retrieval Channel Classification Drop Down Component Stereo (Directions Means)  
172 Retrieval Channel Number Spin Edit (Directions Means)  
173 Retrieval Channel Name Display  
174 Retrieval Channel ON/OFF Display  
175 Retrieval Channel Level Display  
176 Retrieval Activation Carbon Button  
18 Signal Path Display Panel  
181 AD/DD Channel Display  
182 INPUT Channel Display  
183 BUS Channel Display  
184 MATRIX Channel Display  
185 DD/AD Channel Display  
R Connection path (root) (connection)